

**CLAIMS**

1. Method for determining the displacement of a pixel between a first and a second synthesis image, said images being constituted by a set of pixels, the first image being synthesised from a first scene containing an object and a given viewpoint, and the second image being synthesised from a second scene containing the same object, this second scene being obtained from the first scene by moving the object in the first scene and/or moving the viewpoint of the first scene,
- characterized:
- in that it comprises before the synthesis of the second image, a step (76) for defining the colour of at least one point of the object in the second scene according to the position of this point in the first scene in such a manner that the colour or the pixel of the second image corresponding to this point indicates the position of this point in the first image, this definition step comprising:
    - a projection operation (92) on the object of the second scene of a third image (104) constituted by a set of pixels, in which the colour of each pixel indicates its position in this third image, this third image being projected from a projector whose position relative to the object that it illuminates in the second scene is selected to be the same as the relative position of the viewpoint in relation to this object in the first scene,
    - an operation (88) for modifying the surface appearance of the object lit in such a manner that the surface of this object diffuses the lighting of the projector towards the viewpoint, and
    - an operation (86) for removing any spurious light sources capable of modifying the colour diffused by one or more points of the object, and
  - in that after the synthesis of the second image from the second scene in which the colour of at least one point of the object was defined during the definition step, it comprises for this or that point of the object:
    - an operation (122) for identifying the position and the colour of a pixel of the second image corresponding to this point,

- an operation (124) for deducing the position of the object in the first image from the colour identified, and

- an operation (126) for determining the displacement of this pixel from the position identified in the second image and from the position deduced from the pixel colour.

2. Method according to claim 1, characterized in that the number of colours possible for a pixel of the third image is strictly greater than the number of pixels of the first image.

3. Method according to any one of the aforementioned claims, characterized in that the colour of the pixels of the third image is an increasing or decreasing monotone function of the position of the pixel in this third image.

4. Method according to claim 3, characterized in that the third image has a colour gradient in two non-colinear directions.

5. Image synthesis method, each image being formed by a set of pixels, this method comprising:

- a first synthesis step (70) of a first image from a first scene, the first image representing, moreover, an object in the first scene taken from a given viewpoint, and

- a second synthesis step (72) of a second image from a second scene, this second scene being obtained from the first scene by moving the object in the first scene and/or by moving the viewpoint of the first scene,

characterized in that the method comprises:

- a step (74, 120) of determining the displacement of at least one pixel between the first and second images, this step being realized by implementing a method for determining the displacement of a pixel in accordance with any one of the aforementioned claims, and

- a temporal interpolation construction step (130) of at least one intermediate image between the first and second synthesised images using data on the displacement of the (or each) pixel previously determined.

6. Data recording support, characterized in that it comprises instructions for executing a method in accordance with any one of the aforementioned claims, when these instructions are executed by an electronic computer.

7. System for determining the displacement of a pixel between a first and a second synthesis image, said images being constituted by a set of pixels, the first image being synthesised from a first scene containing an object and a given viewpoint, and the second image being synthesised from a second scene containing the same object, this second scene being obtained from the first scene by moving the object in the first scene and/or moving the viewpoint of the first scene, this system comprising:

- a specific image synthesis module (20) suitable for generating images from a three dimensional scene, and

- a control module (22) capable of activating the synthesis module a first time to generate the first image from the first scene, and activating the synthesis module a second time to generate the second image from the second scene,

characterized:

- in that the control module is capable of automatically defining the colour of at least one point of the object in the second scene according to the position of this point in the first scene such that the colour of the pixel of the second image corresponding to this point indicates the position of this pixel in the first image, the control module being capable of achieving this by realising:

- a projection operation (92) on the object of the second scene of a third image (104) constituted by a set of pixels, in which the colour of each pixel indicates its position in this third image, this third image being projected from a projector whose position relative to the object that it illuminates in the second scene is selected to be the same as the relative position of the viewpoint in relation to this object in the first scene,

- an operation (88) for modifying the surface appearance of the object lit in such a manner that the surface of this object diffuses the lighting of the projector towards the viewpoint, and

- an operation (86) for removing any spurious light sources capable of modifying the colour diffused by one or more points of the object, and

- in that the system comprises a computation module (50) of the displacement of at least one pixel between the first and second images capable, for the (or each) point of the object, of:

- identifying the position and colour of a pixel of the second  
5 image corresponding to this point,
- deducing the position of the point of the object in the first image from the colour identified, and
- determining the displacement of this pixel from the position identified in the second image and from the position deduced from the colour of  
10 the pixel.